and never to result in an attack. Thus the tolerance of the body for the protein may be enhanced. Naturally in an ideal course of treatment it would be desirable to obtain the blood each time just prior to or early during an attack of asthma, since it is assumed that it is time that the antigen is in the circulation in the greatest amount. It is possible that the benefit from the treatment may rest on an empirical basis. It can be contended that the mere withdrawal of blood from the circulation and its reintroduction subcutaneously is not sufficient to produce a marked biologic effect on the involuntary muscles. It may also be said that the original presence of antigen in the circulation should also serve to immunize the individual. But this does not take place in asthma, whereas the clinical results from the treatment would seem to permit of the foregoing interpretation. The authors state that six successive patients with bronchial asthma, treated by repeated injections of autogenous defibrinated blood, have shown definite improvement as indicated by diminution in frequency and severity of attacks, gain in weight, increased ability to work and improved subjective symptoms. The results in these cases are promising enough to justify a continuation of the treatment and to find in what proportion of the cases it is of benefit, and to what degree.

A Study of Serum Salvarsanized in Vitro.—Swift (*Jour. Exper. Med.*, 1916, xxiv, 373) says that, following the introduction of intraspinal injection of serum in the treatment of patients with syphilis of the central nervous system, numerous workers have attempted to inject intraspinally salvarsan or neosalvarsan in weak dilution. When more than 1 mg. has been repeatedly injected, several observers have noted symptoms of myelitis in the lower segment of the cord. Marinesco and Minea have observed that neosalvarsan diluted with serum is less irritating than when diluted with normal sodium chloride solution. Fordyce and Ogilvie advise that only a fraction of a milligram of salvarsan be mixed with the serum for intraspinal injection. Clinical evidence seems, therefore, to indicate that only small amounts of salvarsan or neosalvarsan can be safely injected into the subdural space. The main objection to subdural therapy of cerebrospinal syphilis has been that the serum injected contained such small amounts of salvarsan. Obviously it is necessary to keep the amount of any therapeutic agent below the injurious dose. Therefore, with the evidence at hand only small amounts of the drugs at our disposal can be used. The object then must be to use them in the least injurious and most potent form. From the evidence brought forward by Swift this would be the addition of small amounts of salvarsan or neosalvarsan to the serum of salvarsan-treated patients. This serum should be allowed, preferably, to remain in contact with the clot overnight, and should be heated after the addition of the salvarsan. Although this technic is complicated it could be easily carried out in clinics where large numbers of patients are treated, or if the salvarsan is procurable in ampules containing small amounts so that dilutions for addition of the drug to the serum might be economically prepared. Swift summarizes his study as follows: addition of salvarsan to serum *in vitro* produces a spirocheticidal mixture which is increased in potency by heating. The heated serum of salvarsan-treated patients is more spirocheticidal if it has been in contact with the clot overnight than if it has been separated immediately after coagulation. This is not true with the serum from blood which has been salvarsanized *in vitro*. The addition of salvarsan directly to serum produces a more potent mixture than results from the serum from blood to which salvarsan has been added in equivalent amounts. The increase in activity of salvarsanized serum produced by heating to 56° C. is due in part to the removal of inhibitory substances in the serum and in part to a direct increase in spirocheticidal power in the heated salvarsan. Both salvarsanized and neosalvarsanized serum are rendered more spirocheticidal by heating. A more active spirocheticidal mixture is produced by mixing small amounts of salvarsan with the serum of a salvarsan-treated patient than with normal serum.

Immune Human Serum in the Treatment of Acute Poliomyelitis.—WELLS (*Jour. Am. Med. Assn.*, 1916, lxvii, 1211) says that the administration of immune serum in acute poliomyelitis is based on recognized principles of immunity. Because the lesions are not confined to the nervous system and because the lesions therein consist essentially of perivascular infiltration, intravenous injection of serum appears to be a rational procedure, either alone or in combination with intraspinal injection. Intravenous injections of serum should, if possible, consist of doses of from 50 to 100 c.c. or more daily. Following intravenous or intramuscular injections of serum, spinal fluid should be withdrawn. Intraspinal injections of serum usually produces an increase in the number of the leukocytes with increase in the proportion of polymorphonuclear cells in the spinal fluid. In the fifteen cases that Wells treated no ill effects followed the use of serum, either by intravenous or intraspinal injection. In all cases, after intravenous injection, and to a less degree after intraspinal injection, a noticeable improvement usually occurred, which, unfortunately, however, in some cases was only transient. Early administration of the serum is urged, necessitating therefore an early diagnosis of the disease; in severe cases late administration of the serum has produced little if any noticeable influence on the course.

The Action of Benzol.—WEIS ROTTEN, SCHWARTZ and STEENSLAND (*Jour. Med. Research*, 1916, xxxv, 63), in a previous communication, reported experimental work on the action of benzol by giving rabbits two or more daily subcutaneous injections of equal parts of olive oil and benzol. It was found that in all cases in which the animals survived the primary fall in the leukocyte curve there followed a primary rise which reached a normal level and in many instances reached the original level. This primary rise was always independently of any further injections, followed by a secondary fall, which in turn was followed by a secondary rise to a normal level. In the secondary fall the leukocyte curve almost invariably reached a level nearly as low as the primary fall, and in some instances even lower. Further work has given similar results. The authors' experience indicates that the mortality during the secondary fall is practically as great as during the primary fall. In all animals surviving the secondary fall there occurred a return of the leukocyte curve to a normal level, and there was no evidence of any subsequent falls. As a descriptive term appropriate for indicating